

Creating a Long Term Multi-Sensor Ozone Data Record

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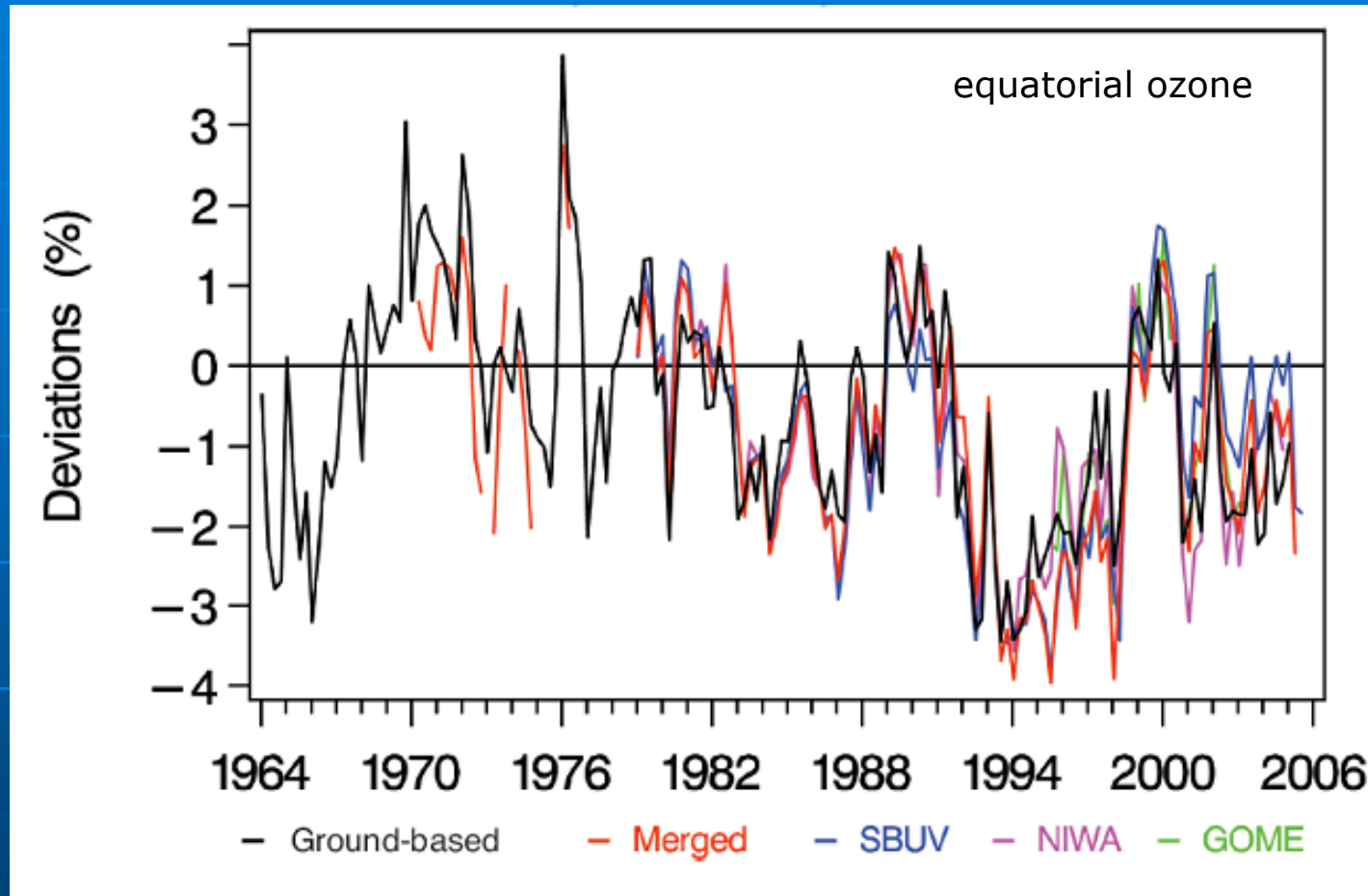
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Ozone Data Sets for Trend Analysis

(ESDR – Earth Science data record)

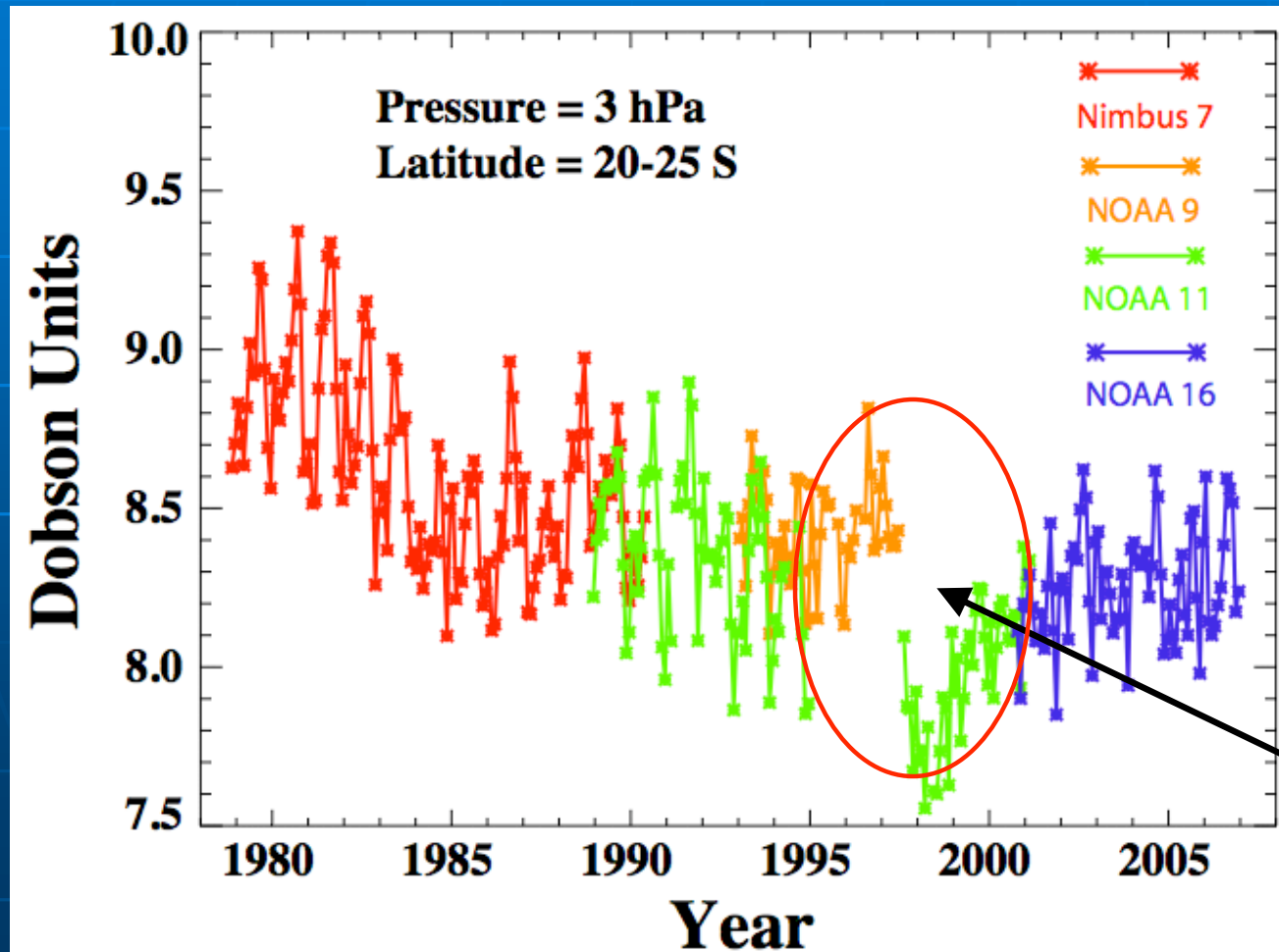
- Instrument team processing
 - Goal is an accurate radiance time series for retrievals
 - capture latitude / zenith angle / altitude dependence
- MOD – merged ozone data
 - empirical adjustment of time series from individual instruments for consistency
 - Instrument overlap periods essential
- MEaSUREs data
 - Analysis to determine best way to combine data
 - Reprocess data sets as necessary to produce consistent time series

Result of applying adjustments to column ozone data sets

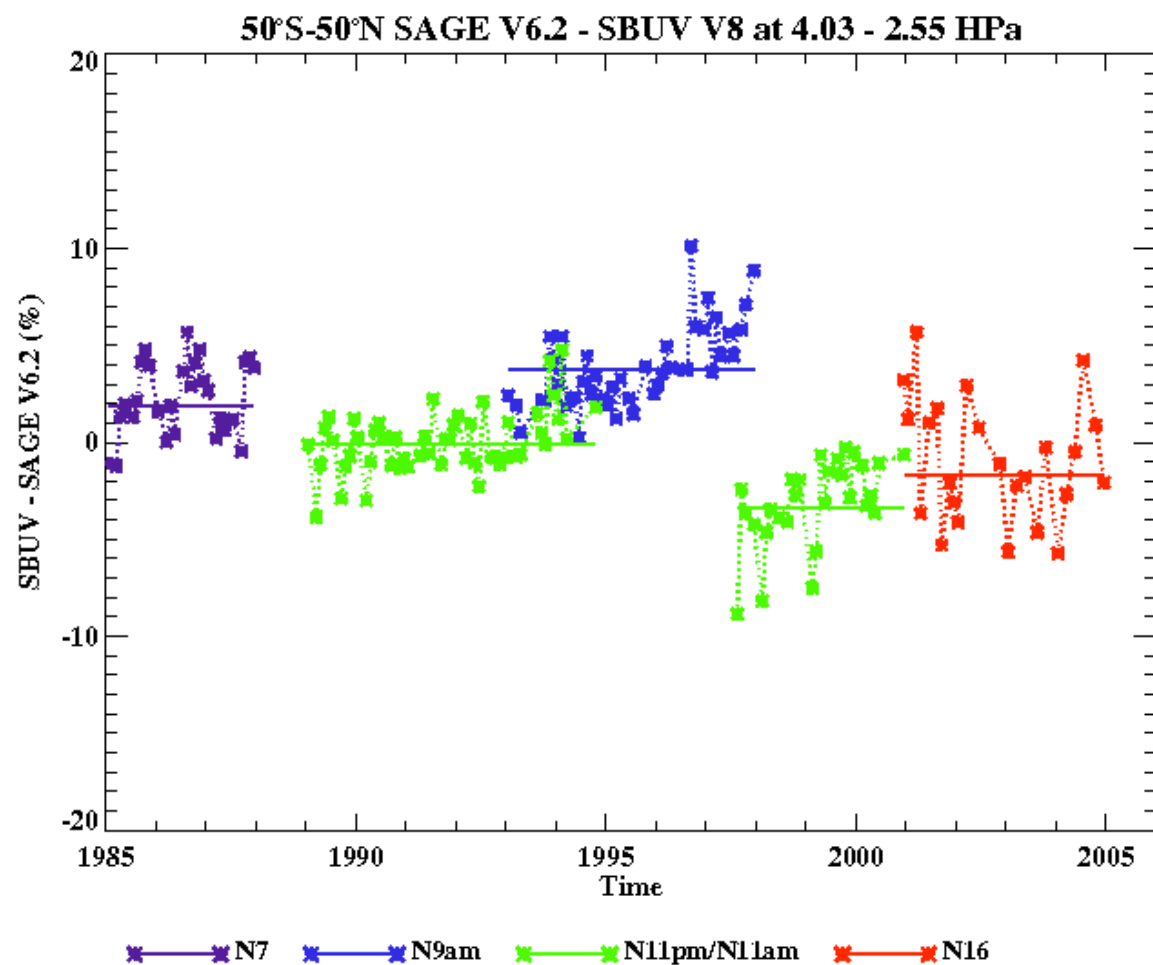


De-seasonalized, area-weighted total ozone deviations from five datasets for the latitude bands 25°S -25°N. (From WMO report #50 "Scientific Assessment of Ozone Depletion 2006")

Data gaps are a problem in constructing a long term ozone data set



Major issue is establishing relative calibration when there is no overlap of instruments in good parts of drifting orbits; as in 1997 with NOAA 9 and NOAA 11.



SAGE can be used as a transfer standard to compensate for data gaps and orbit drift

Work in Progress

- Add OMI total column ozone and profiles to current TOMS + SBUV MOD time series
 - *Better scattered light correction needed*
- Process with consistent algorithm
 - N7 TOMS / EP TOMS processed with v8 algorithm,
 - OMI uses v8.5 (scene-by-scene cloud ht)
 - Derive profiles from OMI using v8 SBUV algorithm
- Extend from zonal means only to 5° x 10° lat/lon coverage
- Add data from OMPS mapper and profiler
 - NPP launch summer 2010
- Add data from SAGE II and MLS
 - Pressure / altitude issue for SAGE

What data should be saved as “MEaSURES” ozone data?

- The final self-consistent merged ozone time series
 - Total column ozone
 - Ozone vertical profile
 - Monthly (+ daily?)
 - Zonal means (+ gridded?)
- The level 2 data sets used to create the merged data set
- The level 1 data?
- External data (like MLS or SAGE) used to establish consistency?